AP Biology

**Chapter 11 - Cell Communication Study Guide**

1. What is a signal transduction pathway? Give an example
2. How does yeast mating serve as an example of a signal transduction pathway?
3. How do intercellular connections function in cell to cell communication?
4. Explain the difference between paracrine and synaptic signaling.
5. How are long distance signals sent? Give an example in the body
6. How do nerve cells provide example of both local and long distance signaling?
7. A signal transduction pathway has three stages. Use Figure 11.6 to label the missing parts of the preview figure below, **and** then explain each step.



**Receptor:**

**Transduction:**

**Response:**

1. Explain the term *ligand*. Give an example of how a ligand is used.
2. Fill-in the chart below regarding the 3 types of membrane receptors:

|  |  |  |
| --- | --- | --- |
| **Receptor** | **How it functions as a receptor** | **Example** |
| G-Protein |  |  |
| Tyrosine Kinase |  |  |
| Ion Channel |  |  |

1. What does conformation mean?
2. In what body system are *ligand-gated ion channels* and *voltage-gated ion channels* of particular importance?
3. How are intracellular receptors unique? Give an example.
4. Where would you expect most water soluble messengers to bind and why?
5. How are phosphorylation cascades similar to a row of dominoes falling down?
6. Explain the role of these enzymes in transduction:
   1. protein **kinase**
   2. protein **phosphatases**
7. What is the difference between a first messenger and a second messenger?
8. Explain the role of the second messenger **cAMP**.
9. When cell signaling causes a response in the nucleus, what normally happens?
10. When cell signaling causes a response in the cytoplasm, what normally happens?
11. How does the disease cholera connect with the concepts of cell to cell communication?
12. Explain how very little epinephrine can have a rapid response in the body.
13. How is signal amplification accomplished in the cell?
14. How is specificity accomplished in cell signaling?
15. What is a scaffolding protein and why is it important?
16. How is termination of a signal accomplished and why is it so important that termination be accomplished?